REGULATORY CONCERNS AND RELEVANT REGULATIONS

Presentation to the International ESCO Financing Conference

Johannesburg, South Africa, May 27, 2013

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The Regulatory Assistance Project (RAP)

We are a global, non-profit team of experts focused on the long-term economic and environmental sustainability of the power and natural gas sectors, providing assistance to government officials on a broad range of energy and environmental issues.

About RAP – US

RAP provides technical and policy support at the federal, state and regional levels, advising utility and air regulators and their staffs, legislators, governors, other officials and national organizations.

We help states achieve ambitious energy efficiency and renewable energy targets and we provide tailored analysis and recommendations on topics such as ratemaking, smart grid, decoupling and clean energy resources. RAP publishes papers on emerging regulatory issues and we conduct state-by-state research that tracks policy implementation.

About RAP – China

RAP assists China's decision-makers in developing and implementing policies that promote economic development, reliability, improved air quality and public health, which in turn produce substantial and permanent reductions in the country's greenhouse gas emissions.

Working with the Energy Foundation's China Sustainability Energy Program (CSEP), we provide technical and international expertise on energy efficiency, market and regulatory reform, renewable resources and environmental policy. Our network of international experts includes Lawrence Berkeley National Laboratory's China Energy Group, the Center for Resource Solutions and the Natural Resources Defense Council.

About RAP – European Union

RAP works directly with European institutions and Member States to advance energy efficiency, renewable power and other low-carbon resources while assuring economic competitiveness and robust regional energy security.

RAP provides ongoing support to energy regulators and government agencies in their efforts to de-carbonise the European power grid and meet the EU's ambitious goals for greenhouse gas reduction.

About RAP – India

In India, there is growing government and private sector interest in energy efficiency and renewable energy policies as key ingredients in a low-carbon, sustainable development path. RAP, which helped train the first generation of regulatory commissioners and staff in India in the 1990's, has provided information on international best practices in these areas and we anticipate becoming more involved in the near future.

About RAP – Other Regions

Our work in Chile, Dubai, Samoa, the Philippines, Brazil, Egypt, Kyrgyzstan, Mauritius, Ghana and other countries has helped to develop national energy guidelines and regulatory reforms, extend electric service to rural areas and provide low-income energy assistance. As a consultant to the Asian Development Bank, RAP has worked to strengthen the regulatory frameworks to help countries in the Asia-Pacific region boost energy efficiency and develop renewable energy resources.

ENERGY RESOURCES IN SOUTH AFRICA: RELIABILITY

Concerns about reliability:

- Rolling black-outs since 2008
- Capacity constraints a possibility for winter peak season 2013 and razor-thin reserve margins otherwise.
- Under the Integrated National Electrification Program, approximately 73% of households have electricity with another 3.4 million homes that still do not have electricity which will increase the demand for electricity; load growth is currently 5% per year on average
- Aging coal fleet

ENERGY RESOURCES IN SOUTH AFRICA: ENERGY EFFICIENCY

- Response by the Republic of South Africa results in:
  - Inclusion of Energy Efficiency as part of future Integrated Resource Planning (IRP);
  - The phase of funding ending March 2013 called for a goal of gross savings of 1,037 MW and cumulative annual total of 4,055GWh
  - According to Eskom's annual report, a total cumulative savings of 3,072 MW has been achieved over the last ten years, representing an offset of 5 generators' worth of output.
  - Creation of Super-efficient Equipment and Appliance Deployment Initiative (SEAD) and collaborative working group.

ENERGY RESOURCES IN SOUTH AFRICA: SUPPLY RESOURCES

- Planned new capacity addition from the Medupi plant first unit. Medupi plant will be the largest dry-cooled coal-fired power station in the world with six units that will generate a total of 4,800 MW. The project cost is at estimated R100bn (USD 12.4B) and the first unit is scheduled to go on line in 2014.
- The current maximum capacity of Eskom power system is 41 GW (DBSA, 2012). Approximately 85% of Eskom generation fleet are 20 years old or older.
- The IRP calls for increased reliance on renewable energy through 2030. Capacity targets for renewable energy include 8400 MW for wind, 8400 MW for solar PV and 1000 MW for Concentrated Solar Power (CSP).

INTEGRATED RESOURCE PLANNING GOING FORWARD

- IRP should continue to be pursued to identify least cost options, such as Energy Efficiency which should be pursued aggressively in the long and short-term.
- Energy Efficiency can be viewed as a resource option to replace retiring coal units and to help accelerate supply options as South Africa continues to electrify.
- Low cost energy efficiency can help balance revenue portfolio requirements when expensive new generation is added.

ENERGY EFFICIENCY AS PART OF AN IRP HAS MANY BENEFITS

Consideration should be given to establishing Energy Efficiency Goals of 2% per year.

- ✓ Mitigating need for new power plant construction
- ✓ Cost-effective replacement for retiring power plant – can be less costly than adding pollution control
- ✓ Relieves transmission congestion
- ✓ Least-cost option especially when combined with Demand Response to address system reliability
- ✓ Provides local jobs that cannot be exported
- ✓ Energy efficiency has no carbon footprint and emits no pollution and reduces health risks associated with traditional supply options.
- ✓ Contributes to energy independence and energy security

CREATING THE RIGHT INCENTIVES: THE BACKDROP

- ESKOM and Municipal Utilities have a strong throughput incentive to sell more electricity.
- Municipal Distribution Utilities (approximately 180+ in number) receive more than 40% of the power produced by ESKOM.
- The cost of the distribution function for municipalities greatly exceed the retail generation cost.

CREATING THE RIGHT INCENTIVES: POTENTIAL SOLUTION

In order to allow ESKOM and the Municipal Distribution Companies to support least-cost options such as energy efficiency in the future, it is important to balance their financial stability/health with public policy objectives such as:

- Recovery of Program Costs
- Recovery of Lost Revenues associated with reduced sales through Decoupling
- An incentive payment that is analogous to a return on equity for a power plant.

Implementing energy efficiency in a comprehensive way will help ensure current and future reliability in a least cost manner while also creating clean jobs and reducing environmental impacts in South Africa.

As more Distributed Generation comes on line, the issue of the throughput incentive will become more dramatic. It is better to address this earlier.

Program and Administrative Costs

Reasonable and prudently incurred utility costs incurred in offering energy efficiency can be recovered in the following manner:

1. Recovered in a rate case
2. Expensed through a rider
3. Amortized over a period of years and recovered through a rider

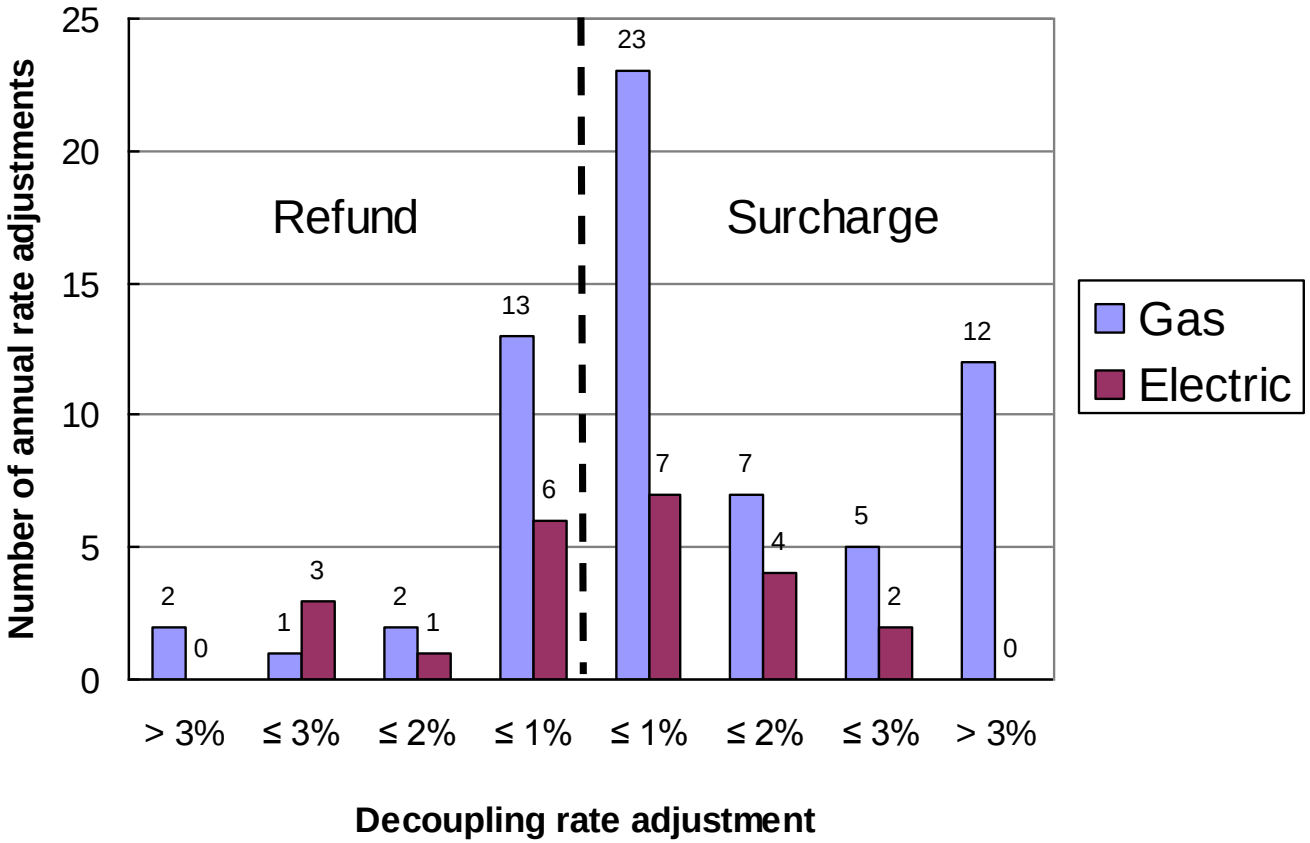
DECOUPLING

- Decoupling separates sales from revenues
- Decoupling maintains the current utility rate design of a small fixed rate plus a volumetric energy charge
- At the end of an agreed to period such as one year the utility's authorized revenue requirements are measured against actual revenues
- Rates are adjusted up or down through a rider to allow utility to recover or pay to customers the difference between revenues authorized and revenues received.

HOW DECOUPLING WORKS

Periodic Decoupling Calculation		
From the Rate Case		
Target Revenues		$10,000,000
Test Year Unit Sales		100,000,000
Price	$	0.10000
Post Rate Case Calculation		
Actual Unit Sales		99,500,000
Required Total Price	$	0.1005025
Decoupling Price "Adjustment"	$	0.0005025

IMPACT OF DECOUPLING ON RATES



PROS AND CONS OF DECOUPLING

- Decoupling viewed with disfavor by consumer advocacy groups because it assures the utility its revenues.
- Decoupling reduces risk by assuring revenues.
- Just as utility recovers its revenue requirements, decoupling protects customers from over-recovery
- Decoupling sends the appropriate price signals to conserve by retaining the volumetric charge

COMPARISON OF REGULATION AND DECOUPLING

Issue	Traditional Regulation	Decoupling
Revenue Requirement	Cost of service	Same, but may allow a “revenue path” between rate cases
Likelihood allowed revenue requirement will be over- or under-collected	High	Low – revenue collected equals “target” revenue
Weather risk	Customers and company bear weather risk with opposite “signs”; Results in wealth transfers based on weather	Customers and company shielded from weather risk; Earnings stability means lower equity ratio required
Economic cycle risk	Company primarily bears economic cycle risk	Company shielded from risk; results in lower cost of capital
Need for rate cases	Likely need more often when growth or other factors are changing	Reduced to 3-5 year periodicity at commission’s discretion
Rate Design	See company’s current rate design	No change required, but income stability concerns addressed.

Decoupling Design and Choices

- Applied to distribution and/or transmission and generation functions
  - Vertically integrated utilities versus deregulated distribution only companies
- Applied to all customer classes
  - Challenges of modeling decoupled rates for large customers with demand charges and a wide range of usage

Decoupling Design and Choices

- Revenue per customer approach where revenues are computed on a per customer basis
  - Insulates customers from decline in load within the utility service territory
- Frequency of Rate Adjustments
  - Annual, Quarterly or Monthly Adjustments

Decoupling Design and Choices

- Rate caps or bands around size of rate adjustment, (e.g. plus or minus 3%)
  - Provisions for carry-over of over or under recoveries
- Reductions in utility return on equity to reflect reduced risk, (e.g. 50 basis points)
  - Controversial among utilities, environmental groups and consumer groups

Decoupling Design and Choices

Utility rate design matched with decoupling – opportunity to adjust rate design to send better price signals

- Inclining Rate Structure
- Flat Rate Structure
- Declining Rate Structure

UTILITY INCENTIVES

- Utilities receive a return on investment for shareholders when building new power plants
- To encourage utilities to chose energy efficiency, incentive payments have been approved by many commissions
- Incentives allow utilities to keep some of the savings resulting from energy efficiency (“shared savings”)
- Incentives offer a new revenue source for distribution only companies that have limited opportunities to increase earnings.
- Has the potential to provide more immediate returns

RETURN ON ASSETS APPROVED BY NERSA

- 2013/2014 – 3.6%
- 2014/2015 – 3.8%
- 2015/2016 – 3.7%
- 2016/2017 – 3.9%
- 2017/2018 – 4.7%

Types of Incentive Mechanisms

- No Incentives – supported by some consumer (residential and /or industrial) concerned about higher rates.
- Shared Net Benefits – utility receives a share of the deemed net resource benefit for the life of the measure or some other designated period of time.

Types of Incentive Mechanisms

- Program Cost Bonus – Utility receives a share of the annual portfolio's program administrative and measure incentive costs
- Cost Capitalization – Utility receives an additional rate of return on the capitalized investment in energy efficiency

Design of Incentive Mechanisms

Frequently, incentive mechanism contain a performance component so that higher energy efficiency levels produce higher returns for the utility. See example below:

- Incentive level set at 5% for 100 – 114% of goal
- Incentive level set at 7.5% for exceeding 115% of goal

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INCENTIVE MECHANISM PROPOSED IN ARKANSAS, USA

Sample Calculations of the Three-Year Shareholder Incentive Mechanism

Three-Year Budget ($mil)	$120
Three-Year Net Benefit Goal ($mil)	$100
Percent of Budget for Target Incentive	6%
Available Incentive at 100% of Goal ($mil)	7.2

INCENTIVE MECHANISM PROPOSED IN ARKANSAS, USA

Performance Level	% of Net Benefits Achieved	% of Budget Available	3-Yr Available Incentive
Threshold	80%	4%	$4.8 million
Target	100%	6%	$7.2 million
Exemplary Cap	120%	8%	$9.6 million

CONCLUSION

- Energy efficiency can play a significant role in resource planning in the short and long term.
- South Africa should consider adopting comprehensive energy efficiency goals such as 2% per year.
- Energy Efficiency is a least cost-option that distribution providers should be encouraged to provide
  - Decoupling can protect utilities against lost revenues
  - Incentive payments can provide a new profit center for utilities
- Energy efficiency helps reduce a utility's overall carbon footprint.

About RAP

that power policies

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts focuses on the long-term economic and environmental sustainability of the and natural gas sectors. RAP has deep expertise in regulatory and market that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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